

Remarks

The Applicants have amended Claims 17, 20-25 and 41-42 as described below. In particular, Claim 17 has been amended to change “55-80%” to “60-75%”. Also, “20 to 45%” has been changed to “25 to 45%”. Support may be found in original Claim 18. Claim 18 has accordingly been cancelled. As a result of the cancellation of Claim 18, Claims 21-25 have been amended to remove reference to that now cancelled claim. Claim 20 has been amended in a similar manner to Claim 17.

Claim 17 has further been amended to remove reference to a “selected” melt viscosity ratio. The melt viscosity ratio is now referred to as “a melt viscosity ratio (a)/(b) in a range of 1.1 to 10.0.” A similar amendment has been made to Claim 20. Support for the range of ratios of melt viscosity may be found in the examples wherein Example 15 provides the minimum melt viscosity ratio of 1.1 and Example 18 provides a maximum melt viscosity ratio of 10.0. Others of the examples provide melt viscosity ratios in between those two values.

Claim 41 has been amended so that the range of melt viscosity ratio is 4.7 to 10.0. Example 4 provides the 4.7 minimum of the range while Example 18 provides the maximum. Claim 42 has also been amended to recite a melt viscosity ratio from 1.1 to 5.5. As noted above, Example 15 provides the 1.1 minimum, while Example 3 provides the 5.5 maximum in that claim. Entry of the above amendments into the official file is respectfully requested.

The Applicants note with appreciation the withdrawal of the previous 35 U.S.C. §103 rejection over JP ‘172.

The Applicants note the new rejection of Claims 17-18, 20-31 and 41-42 under 35 U.S.C. §112. The Applicants note the Examiner’s helpful comments concerning the particulars of the rejection with respect to Claim 17, 20 and 41-42. Those claims have been amended to remove reference to a “selected” melt viscosity ratio. Working ranges have been inserted as described above. The Applicants respectfully submit that the rejection is now moot and respectfully request that it be withdrawn.

The Applicants note the rejection of Claims 17-18 and 20 under 35 U.S.C. §102 as being anticipated by Akhtar. The Applicants note with appreciation the Examiner’s helpful and detailed comments concerning the hypothetical application of Akhtar to those claims. Nonetheless, the Applicants respectfully submit that in view of the comments set forth below, that it becomes clear

that Akhtar is not anticipatory of those rejected claims.

The Examiner notes that the Patent and Trademark Office does not have proper means to conduct experiments and that it is accordingly not possible to directly compare the shear viscosity of Akhtar N6 with the Applicants' Comparative Examples 2 and 4 with respect to relative viscosity. In that regard, the N6 of Akhtar has a shear viscosity of 82 Pa.s, while the Applicants' Comparative Examples 2 and 4 have a relative viscosity of 2.80.

The Applicants enclose a Table 1 which is a graph which shows the relationship between shear viscosity and relative viscosity of Nylon 6, which is the same as Akhtar's "N6". It can be seen from the table that the 82 Pa.s shear viscosity of Akhtar is the same as the relative viscosity of 2.80 of Comparative Examples 2 and 4.

As a consequence, the Applicants respectfully submit that it is now possible to make a direct comparison between the shear viscosity of 82 Pa.s of Akhtar's N6 and the relative viscosity of the Applicants' Comparative Examples 2 and 4 which is 2.80. It is further now possible to directly compare the melt viscosity ratio of the Applicants' Comparative Examples 2 and 4 which contain N6-1 as set forth by the Applicants as being Nylon 6 with a relative viscosity of 2.80. In other words, the Applicants' Comparative Examples 2 and 4 have exactly the same Nylon as that of Akhtar. It also then becomes clear that the melt viscosity ratio of Comparative Examples 2 and 4 apply directly to Akhtar. What is important to note is that the melt viscosity ratio of both of Comparative Examples 2 and 4 is 0.6. In other words, the Applicants have directly correlated their comparative examples with Akhtar. What is further important as a result of the correlation is that the melt viscosity ratio of 0.6 in each of Comparative Examples 2 and 4 is well outside the Applicants' claimed range of 1.1 to 10.0.

What this means is that Akhtar's blend does not inherently have the same properties of those of the Applicants, including their morphologies. In fact, the Applicants respectfully submit that they have demonstrated by this direct comparison and correlation that Akhtar's blend would likely inherently have different properties including their morphologies. In that regard, it must be remembered that a rejection based on inherency must demonstrate that the claimed properties "necessarily" are present. The Applicants respectfully submit that the facts on this record do not rise to the level of the claimed characteristics "necessarily" be present. In fact, the Applicants respectfully submit that they have now demonstrated that the claimed characteristics are not only not

“necessarily” present, but are likely to not be inherently present. As such, the Applicants respectfully submit that the §102 rejection based on inherency cannot be maintained. Withdrawal of the rejection is respectfully requested.

The Applicants note the rejection of Claims 17-18 and 20-24 under 35 U.S.C. §102 as being anticipated by Selby. The Applicants particularly note with appreciation the Examiner’s detailed comments concerning the hypothetical application of Selby to those rejected claims, particularly with respect to the volume fraction wherein the rejection states that “Selby’s polyamide can be present in an amount of about 56% and PPS can be in amount of about 44%.” The Applicants respectfully submit that Selby is inapplicable for the reasons set forth below.

As noted above, the Applicants claim 60 to 75% by volume of polyamide resin and 25 to 45% by volume of PPS. The Applicants respectfully submit that Selby fails to disclose this, either explicitly or implicitly. Assuming *arguendo* that Selby’s polyamide can be present in an amount of about 56, such an amount is outside of the Applicants’ claimed range of 60 to 75% by volume of polyamide. Similarly, assuming *arguendo* that the amount of PPS disclosed by Selby is in an amount of about 44%, this is also outside of the Applicants’ claimed ranged of 25 to 40% by volume PPS. The Applicants therefore respectfully submit that Selby fails to disclose, either explicitly or implicitly, multiple claimed aspects of Claim 17-18 and 20-24. Withdrawal of the rejection is respectfully requested.

The Applicants note the rejection of Claims 17-18 and 20-21 under 35 U.S.C. §102 as being anticipated by Takagi. The Applicants respectfully submit that Takagi is inapplicable for the reasons set forth below. As noted above with respect to the volume percentages that exclude large portions of the Takagi disclosure, the Applicants have amended both of those claims to include a specified melt viscosity ratio that is not disclosed by Takagi. Accordingly, the Applicants respectfully submit that Takagi is inapplicable.

Moreover, with respect to any speculation that blends of Takagi overlap with the volume percentages of Claim 17 or 20, the Applicants respectfully submit that their phase structure would not inherently be the same. For example, Example 1 of Takagi discloses a blend of 25:75 PPS:polyamide 46 which were melt blended in a closed vessel. However, the Applicants typically produce their claimed polymers by melt blending uniformly at a reduced pressure. Generally, the combination of PPS and polyamide 46 is quite miscible as noted in J. Macromol. Sci. - Physics,

B41(3), 407-418 (2002). Thus, if those components are blended at reduced pressure in a closed vessel as taught by Takagi, the blend will appear as a uniform morphology at a molecular level. In sharp contrast, the Applicants typically melt blend at high pressure with an extruder and, as a consequence, as noted in Claim 17, the PPS resin forms a matrix phase and the polyamide resin forms a disperse phase. On the other hand, Claim 20 recites that the polyamide forms a continuous phase and the PPS resin forms a laminar disperse phase.

As a consequence, the Applicants have established that Takagi fails to disclose, either explicitly or inherently, significant claimed characteristics. It should be noted that the rejections based on inherency can only be maintained if the claimed physical characteristic is “necessarily” present. In this case, the Applicants have already established that the claimed physical characteristics such as the continuous phase and dispersed phase are not “necessarily” inherently present. In fact, the Applicants have established that they are likely to be different. Withdrawal of the rejection based on Takagi is respectfully requested.

The Applicants note the rejection of Claims 17-18 and 20-22 under 35 U.S.C. §102 as being anticipated Ono. The Applicants respectfully submit that Ono is inapplicable for the reasons set forth below.

The Applicants respectfully submit that Ono is inapplicable for many of the same reasons set forth above with respect to Takagi. In particular, Claims 17 and 20 have been amended with respect to the percent volume of the components which excludes large portions of the applicability of the subject matter to Ono. In any event, Ono fails to disclose the claimed melt viscosity ratio in the specific range 1.1 to 10.0. Careful scrutiny of the entire Ono document reveals that Ono simply does not address that claimed aspect at all.

There is another problem with Ono, however. In particular, there is nothing on the record that indicates that the morphology of Ono would be the same as that recited in Claims 17 and 20. In fact, the Applicants believe that the contrary is true. For example, Table 2 of Ono discloses 30/70 PPS/Nylon 66. However, the PPS and the Nylon 66 of Ono are blended in α , chloronaphthalene at 220°C as set forth in Examples 1-5. In such a solution, the polymers are blended at the molecular level in a uniform fashion and cannot expect to have an effect on the difference of the melt viscosity of each polymer. Therefore, the Ono resin composition is strongly likely to form in a uniform morphology which is contrasted to the Applicants’ claimed morphology. The reason that the

Applicants have a different morphology is because of differences in methods of preparation such as melt blending by the Applicants in most cases.

Thus, the Applicants have established that not only does Ono fail to disclose specifically claimed physical characteristics of the Applicants' thermoplastic resin, but also that they would not "necessarily" be the same irrespective of the failure to disclose them. Rejections based on inherently require that the claimed physical characteristic "necessarily" be present. The Applicants have established that the claimed physical characteristics are unlikely to be quite different from that of the Applicants'. The Applicants therefore respectfully submit that Ono is inapplicable. Withdrawal of the rejection is respectfully requested.

The Applicants note the rejection of Claims 17-18 and 20-22 under 35 U.S.C. §102 as being anticipated by Deguchi. The Applicants respectfully submit that Deguchi is inapplicable to those rejected claims.

Although the Applicants note with appreciation the Examiner's helpful comments concerning the hypothetically broad disclosure of Deguchi, Deguchi actually provides evidence of their structure. That evidence is not described in detail. However, it is characterized that "each polymer domains which has small particle size are dispersed finally in the resin composition." What that means is that the sole example of Deguchi, namely, polyamide/PPS in a 50/50 ratio forms a particle disperse phase and not a laminar disperse phase as specifically required by Claim 20, for example.

Thus, the Applicants respectfully submit that Deguchi is largely uninformative as to the morphology of the various ratios of polymers. However, to the extent that it provides any guidance, that guidance leads one skilled in the art to conclude that the morphology is different from that of the claimed morphology. Therefore, it would be nothing but unsupported speculation that any of the other potential morphologies of Deguchi would be within the scope of the rejected claims. This is particularly true in view of the multiple other references that have already been discussed in detail which show that the morphologies of those components are also quite different from the morphologies claimed herein. In other words, the Applicants have already established in at least four of the references that morphologies with overlapping percentages of resin are different. There is nothing in Deguchi that would cause one skilled in the art to believe that the morphologies of Deguchi would be any different from the morphologies of the prior art, namely, not the same as the morphologies of the rejected claims. This is particularly true in view of the fact that Deguchi does

contain one affirmative example and does provide one brief description of that morphology which is not the same as the morphology set forth in Claim 20, for example. Withdrawal of Deguchi is accordingly respectfully requested.

The Applicants note the rejection of Claims 21-31 under 36 U.S.C. §103 over the various hypothetical combinations. In that regard, the Applicants have already addressed five of the primary references and the Applicants respectfully submit that hypothetically combining secondary references to establish multi-layers utterly fails to cure the fatal deficiencies set forth above with each of the primary references. Withdrawal of those rejections is therefore respectfully requested.

With respect to the rejection based on the hypothetical combination of Tateyama with JP '172, the Applicants respectfully submit that this hypothetical fails to teach or suggest the subject matter of Claims 21-31 for the reasons set forth below.

The rejection states that JP '172 discloses a blend comprising Nylon 66 (40 – 95 wt%) and PPS. The rejection therefore concludes that the blend has to have the same properties as those of Applicants', including morphologies. However, JP '172 discloses at line 15 of left hand column to line 3 of right hand column in page 3 as follows: "It is clear by data of a differential thermal analysis and a scanning electron microscope that the molding of the present invention has a morphology in which super micro particles of polyphenylene sulfide disperse in nylon 66,...." That morphology is clearly different from the morphology of Claims 17 and 20.

The Applicants believe that the morphology of JP '172 is the same morphology as Comparative Examples 2 and 4 of the Applicants' Specification because the polyamide employed in JP '172 is a grade for injection molding. Therefore, the polyamide should have a similar relative viscosity of polyamide to those of polyamide in the Applicants' Comparative Examples 2 and 4.

The rejection states that the Applicants' allegation that the morphology depends on the melt viscosity ratio of the polymers is merely an opinion, not evidence. However, the Applicants' Specification discloses a correlation between the morphology and the melt viscosity ratio of the polymers. All of the melt viscosity ratios of the polymers in the Examples are more than 1, but less than 1 in the Comparative Examples.

The Applicants respectfully submit that hypothetically combining Tateyama with JP '172 completely fails to cure the deficiencies set forth above with JP '172. The result would still have a morphology that is different from Claims 21-31. Withdrawal of the rejection is respectfully

requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'T. Daniel Christenbury', written over the printed name.

T. Daniel Christenbury
Reg. No. 31,750
Attorney for Applicants

TDC/vbm
(215) 656-3381



Table 1

